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SUBSTANCE MISUSE IN THE ELDERLY

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SUBSTANCE MISUSE IN THE ELDERLY

FOREWORD

The terms "misuse" and "abuse" are used interchangeably in the literature. However, "misuse" is used in this review because it describes the problem surrounding the elderly without a judgemental connotation. Misuse means "wrong or improper use or application" whereas abuse means "unjust or corrupt practice".

This review examines the health implications of the problem specifically and not the legal or transgressive aspects.

Misuse of drugs and alcohol by the elderly is addressed in this review. Drugs include both prescription medications (R_x) and over-the-counter (OTC) proprietary preparations.

Sections 1.0 to 3.10 pertain to drug misuse and sections 4.0 to 9.0 pertain to alcohol misuse.

EXECUTIVE SUMMARY

DRUG MISUSE

In British Columbia, the elderly comprise 12 percent of the population yet consume 40 percent of the prescription drugs. In addition, it is estimated 40 percent of persons over age 60 use over-the-counter (OTC) drugs every day. North American and European studies show the elderly are well over-represented in the consumption of drugs.

Excessive useage of drugs can create special problems for the elderly. Adverse reactions to prescription and OTC drugs are more common in the elderly because of the physiologic and metabolic changes associated with aging.

It is not surprising that drug use increases as people grow older and experience more health problems. However, with over-use and inappropriate use the drugs themselves cause illness and account for geriatric admissions to hospitals.

Certain factors seem to be frequently implicated in drug misuse. They involve:

1. Combination of prescription and OTC drugs can cause adverse reactions.

2. Over-use and improper administration of both prescription and OTC drugs can lead to medical problems and also deny the patient the therapeutic value originally intended.

3. Many patients fail to recognize drug induced adverse reactions.

4. Obtaining drugs from multiple sources makes it more difficult for physicians and pharmacists to control consumption; and

5. Patient habits which involve alcohol consumption, smoking, poor diet and indiscriminate use of OTC drugs can lead to adverse effects requiring medical treatment.

To reduce elderly drug misuse, authors suggest preventive strategies that address many important aspects of the drug industry. These include manufacturing, promotion, physician prescribing and patient conduct. Specific initiatives are consumer education; re-education of physicians in geriatric prescribing; better utilization of pharmacists; controls on the marketing of drugs and more research to find the safest, most effective drugs for the elderly. Concerted actions to reduce drug misuse in the elderly are urgently needed and well-planned programs could have significant beneficial outcomes.

ALCOHOL MISUSE

Historically, alcohol (wine/beer) has been used by the elderly at religious ceremonies, as a medicine, and at social events. With the discovery of distillation in the 17th century, alcohol became more potent and more available which created serious social and health problems.

Today, elderly alcohol misuse generally involves consumption at a level which interferes with a person's ability to function normally (including socially) or damages the person's health or well-being. It is estimated 10 to 15 percent of elderly misuse alcohol and suffer some undue consequence.

Problems can come from relatively small amounts of alcohol because the elderly have reduced organ capacity and hence greater susceptibility to alcohol. A safe drinking level for some elderly may produce problems for others.

Alcohol can affect virtually every organ in the body. Heavy long term drinking can result in serious brain damage causing dementia and recent research has found a link to osteoporosis.

Alcohol has been found to interact adversely with more than 150 commonly prescribed drugs. Therefore, those elderly who drink and use medication may experience the double jeopardy of losing the therapeutic value of the drugs and sustaining more medical problems from adverse interactions.

The mental and social problems of alcohol misuse can thwart the elderly's ability to live independently in the community and care for themselves.

The literature defines two types of elderly alcoholic, the "early onset" which includes those who have been drinking most of their lives and the "late onset" who began drinking late in life. This latter group probably experienced serious late life problems which precipitated the drinking. They have the better prognosis for recovery because they respond well to treatment. The early onset group frequently requires detoxification in a hospital. For these patients the prognosis is poor.

Alcohol treatment centres develop their own methods to assist the elderly with alcohol problems. However, success seems to be associated with specific strategies such as:

1. Treatment should be individualized and planned according to whether the person is an early or late onset drinker.

2. Distinction should be made between heavy drinkers and those suffering alcoholism.

3. Programs should use peer counsellors; and

4 Social groups and networks should be established.

Effective treatments require well-planned and coordinated services that involve the patient's family and physician.

DRUG MISUSE

INTRODUCTION

The elderly experience more illness than young people and often need medication to treat increased susceptibility to disease.(34) Therefore, they use more durgs than the younger age group. However, drug misuse occurs when the useage is inappropriate (section 2.0) such that the person experiences no therapeutic value or suffers some harm. Therefore, high use is not necessarily misuse but as the number and quantity increase the likelihood of misuse increases too.

Misuse is described in the literature mostly by authors who conducted community surveys; by physicians who described their case histories; by health agencies which studied their institutionalized patients and health professionals, public and private, who care for the elderly. Although these many diverse sources give different viewpoints and sometimes anecdotal information on misuse, they do show the many ways in which drug misuse can occur.

1.0 Prevalence of Drug Use in the Elderly

In British Columbia the elderly (65 years and over) comprise about 12 percent of the population, yet account for 40 percent of all prescription costs (13). Pharmacare statistics do not show age group and sex consumption distributions. Nevertheless their unpublished statistics show during 1987 there were 316,023 (87% of all 65+) independent elderly who used an average of 13 prescriptions.

The 1976 Saskatchewan Prescription Drug Plan Survey reported that 77.3 percent of the elderly received an average of 12.8 prescriptions during that year. This average increases to 16.2 prescriptions for those over 84 years. The elderly who comprised 11 percent of the population in 1976 received 28 percent of all prescription drugs in the Province.(54)

Surveys conducted in Ontario in 1976, 1977, 1982 and 1984 found that psychoactive drugs were used at least once by 14.0, 17.3, 12.8, and 13.2 percent, respectively, by adults 50 years and over. For all surveys, except 1977, the percentage of females using these drugs was twice that for males.(1) These statistics are based on Gallup household surveys where the sample sizes were 1545, 1772, 1040 and 1051, respectively.

The 1981 Canada Health Survey findings described by McKim and Mishara show that 13 percent of male and 25 percent of female elderly take three or more different drugs concurrently whereas for all ages these percentages are 4.2 and 8.9, respectively.(37)

A University of Montreal telephone survey in 1979 called 1187 francophone women. It was found that 44.2 percent in the 50-65 age group were psychotropic drug users.(36)

Household interviews conducted by the U.S. National Centre for Health Statistics in 1976 shows 6.7 percent for males and 10.8 percent of females in the over 44 age groups use sleeping pills at least once a week.(41) This predominant use of psychoactive drugs by women was also found by the U.S. National Center for Drug abuse in 1981 where half of adult women reported using psychotropic drugs for medical reasons. This is twice the rate for men and, in fact, 70 percent of prescriptions for such drugs are written for women.(3)

In 1980, a U.S. federally subsidized apartment of 183 low income elderly were interviewed for their current drug use. The mean age was 77 years and three quarters of the residents were females. It was found 75 percent were using prescription drugs and 82 percent were using over-the-counter (OTC) drugs. About 25 percent of the prescriptions were psychoactive medications. Each person averaged 3.1 prescriptions and 2.6 OTC products. The prescription drugs were used mainly for hypertension and congestive heart disease.(43)

Another small study was reported in a paper given in 1979 to the American Society of Hospital Pharmacists. Sixty-seven people over age 59 were screened for their prescription drug use. They used 221 drugs for 125 medical conditions and 43 percent of subjects were seen to commit 36 instances of misuse.(47)

The prevalence of OTC drug use in elderly is difficult to measure because there is generally no documentation on the demographic profiles of OTC customers. Individual physician experience is important for reporting this type of use. Kofoed estimates that 40 percent of persons over age 60 use OTC preparations every day. This is seven times the rate for younger adults. Older women use twice the aspirin that older men use.(20) Michocki states that older patients use twice the OTC drugs as prescription drugs. This appears to be an unsubstantiated opinion.(38)

From 1974 to 1976 the Rand Health Insurance Experiment randomly sampled 4,007 adults in 5 U.S. cities. It was found increased age is significantly associated with an increased probability of prescribed tranquilizer use. Adults aged 46 to 62 were more than twice as likely to report tranquilizer use in the preceding 3 months as adults 18 to 32 years. Tranquilizer use was found to be primarily associated with age, sex and health status.(60)

The U.S. National Institute of Mental Health participated in sedative drug use household surveys in 9 Western European countries in 1971. Two thirds of anti-anxiety/sedative drug users were women. In Germany this figure is near three quarters. Persons 45 years of age and over are significantly over-represented among anti-anxiety/sedative drug users. In every country the proportion of females who had used these drugs daily for one month was approximately twice as large as the proportion of males who had done so.(2)

The U.S. Public Health Service pays special attention to dispensing patterns for barbituate sedatives and Valium. The National Disease and Therapeutic Audit found in 1974 that 30 percent of Seconal (barbitute sedative) went to persons over 60 (14% of population) and 24 percent to persons 65 and over (10% of population). A similar pattern was found for Valium use. It can be concluded that people 60 and over make extensive use of sedatives, and to a lesser degree, tranquilizers.(4)

In England during 1973 and 1974, a general practitioner initiated a survey of 151 patients (112 females, 39 males) who were 75 years and over to see how they managed their medicines. It was found that 87 percent were on regular drug treatment and 34 percent took three to four different drugs each day. These elderly patients took three times the number of drugs prescribed for the general population and women took twice as many drugs regularly as men.(32)

SUMMARY

Studies in North America and Europe show that the elderly are over-represented in the consumption of prescription drugs and probably over-the-counter preparations. Women consume twice the quantity of drugs as men and these drugs are frequently psychotropics. Drug use increases with increasing age as more and more health problems occur.

2.0 Medication Problems

The literature describes many circumstances surrounding drug problems. Most can be grouped within the following five areas.

1. Adverse reactions to drugs (R_x,OTC);
2. Inappropriate administration of drugs;
3. Lack of patient education and information on identifying side effects;
4. Polypharmacy; and
5. Patient habits antagonistic to drugs.

2.1 Adverse reactions to drugs (R_x,OTC)

The risk of adverse drug reactions (ADR) is intensified in elderly patients because of physiologic changes associated with aging.(15)

A good review of ADR is given by Dr. J. Williamson who is a specialist in geriatric medicine. He describes the metabolic changes that occur with aging which make the elderly person more susceptible to drug induced reactions. Figure 1 in his article shows the prevalence of ADR in relation to the number of prescribed drugs and Figure 2 shows the risks of ADR associated with seven classes of drugs. This paper also provides a list of seven general rules for safe prescribing. It is an interesting and well written work with practical advice on prescribing suggestions for the physician with elderly patients.(62)

From January to May, 1985, Leach and Roy conducted surveillance of 521 geriatric patients admitted to the geriatric unit of an acute care hospital. They found 117 adverse drug reactions in 94 (18.8%) of the 500 patients who received medication. Thirteen of these reactions were considered severe. The patient's average age was 78.3 years with 242 of them men and 279 women. This brief paper emphasizes there can be undue problems from medication in the geriatric hospital environment and that the best prevention is to use a minimum of drugs.(33)

An earlier study by Williamson and Chopin was conducted in England, Wales, and Scotland during 1975 and 1976. Of 1,998 patients consecutively admitted to geriatric units, 81.3 percent were prescribed drugs on admission. Adverse reactions occurred in 248 patients (82 males, 166 females) or 15.3 percent of drug users. There were 547 men and 1078 women who were prescribed medication and 38.3 percent of men and 21.3 percent of women were aged less than 75 years. Diuretics were responsible for the largest number (60) of adverse reactions, with psychotropics a close second. A significant relationship was found which shows an increase of adverse reactions with an increase in the number of drugs administered. Extrapolation suggests that of the 140,000 annual geriatric admissions there would be about 5,300 who would not make a full recovery. This study presents important findings from a well conducted investigation and lends urgency to the need for greater care in prescribing drugs for older patients.(63)

Adverse drug reactions are discussed in a paper by Berlinger and Spector who are specialists in pharmacology and internal medicine. They advise that dosage levels which are correct for young adults may be too high for the elderly. Physiological changes in the elderly may result in increased potency effects from drugs. A 65 year old patient should receive, on average, about 50 to 70 percent of the adult dosage. Advice is given on specific drugs that cause adverse reactions. Table 1 lists psychoactive and other drugs that have undue clinical effects. Table 2 lists 10 drug types to avoid when treating the elderly. This paper contains practical advice for physicians who prescribe for elderly patients.(5)

OTC drugs can cause a drug-induced illness requiring hospitalization. Over a three year period Caranosos and colleagues found 2.9 percent of 6,063 admissions to a medical service hospital in Florida were drug induced and in 18.1 percent of these, over-the-counter drugs were implicated. Antacids, aspirin and laxatives are mentioned as causing specific medical problems in 32 of the 177 drug caused admissions. The authors warn that OTC medicines, alone or in combination with prescription drugs can produce severe reactions. Although this study was done in 1974, its findings highlight some important problems surrounding OTC preparations that are frequently used today.(8,51)

Advice to physicians on OTC drugs is given by Michocki, Assistant Professor and Doctor of Pharmacy at the Center for the Study of Pharmacy and Therapeutics in the Elderly, University of Maryland, School of Pharmacy. He describes four types of OTC drugs that can cause adverse reactions in the elderly. Analgesics (aspirin), antacids, laxatives and vitamins can all cause problems in the elderly especially when the use of these products is unknown to the physician who prescribes medication antagonized by the OTC drugs. Table 1 lists 6 types of OTC drugs and their maximum 24 hour dose along with some side effects comments. Table 2 gives examples of interactions of salicylate (analgesic) with prescription drugs. For physicians whose patients are regular OTC users, this article should be "prescribed" reading.(38)

2.2 Inappropriate Administration of Drugs

The administration of drugs is cited by several authors to be of particular concern among elderly patients. This area of misuse was succinctly described by Whittington as overuse, underuse, erratic use and contraindicated (or inappropriate) use.(17)

Ostrom and co-workers reported that the most common problems among elderly residents (mean age = 77) in their study of low income-subsidized housing were: a change in dosage after drug was dispensed; wrong dosage schedule; and patients who could not read the labelling.(43)

Another study at Simon Fraser University in 1979 points to other types of administration problems. From a sample of 146 elderly subjects the main problems were using old medication; improper storage; incorrect dosage and a lack of instruction for proper use. The conclusion of this B.C. study is that elderly patients cannot be expected to comply with medication regimen correctly without increased involvement of the pharmacist.(13)

NcKim and Mishara describe an increasing number of drug-related concerns reported by patients' relatives, health-care workers and social workers. The most frequently reported problems include: hoarding drugs; using past expiry date; purchasing extra supply through another physician; using a mixture of prescribed and OTC drugs; exchanging drugs with others; misinterpreting label instructions or misidentifying drugs; failing to consume drugs on schedule or with inappropriate liquids or food and being unable to open the drug containers.(37)

In the United States, the General Accounting Office (GAO) investigators found the supervision of nursing home patients to be "sadly lacking". Their survey of 50,000 Medicard patients receiving 10 types of medication daily showed administration of medication problems in 81 percent of the cases. A House Select Committee on aging concluded that drug misuse in nursing homes is attributed to a lack of proper supervision by health professionals; use of untrained employees and inadequate federal regulation of drug suppliers.(16)

2.3 Lack of patient information and education on identifying side effects from drugs

Studies in the literature indicate patients should be better informed on the effects from drugs. When a patient suffers ill effects from prescription drugs, the physician should be promptly advised. The pharmacist should be consulted more often, especially when OTC drugs are purchased during a period of taking prescribed medication.

Several authors identified this type of problem.

A nation-wide telephone survey of 1,223 individuals in the United States found only 11 percent said that they had been informed by their doctor about their most recent medication's side effects.(40)

An extensive literature review entitled, "Drugs and the Elderly Adult", lists a work by Gaetano which says, "... elderly persons are often unaware of what constitutes a side effect...". He concludes, "Consumer education should be the main emphasis of a drug education program for older adults".(18)

Michele Basen of the National Institute on Drug Abuse in the United States provided an overview of elderly drug problems and states that, "Much concern focuses on the inappropriate prescribing of psychoactive drugs by the well-intentioned physician who is either not fully informed as to the drugs' potential effects or who allows him or herself to be manipulated by patients seeking drugs".(4)

Drug counselling to a group of 183 elderly apartment residents in Seattle, Washington reduced drug usage by 11 percent after one year. This study used an educational "handout" prepared by a pharmacist and a personal interview. This intervention was described by the authors as, "an effective means of improving medication behaviours and may help to decrease risks of adverse drug effects".(43)

The drug administration errors suggests that patients may have been given inadequate information by health professionals that prevented optimal drug use", concludes another author.(53)

2.4 Polypharmacy

The administration of many drugs together or excessive medication is polypharmacy. This can occur when patients obtain prescriptions from more than one physician or purchase a variety of OTC preparations and/or prescription drugs from several pharmacies.
(11,13,29,31,44,45,50)

Data from the Canada Health Survey 1981 reported by McKim shows that as age increases, the use of both OTC and prescribed medications increase too. The authors generalize by saying, "Virtually all studies of drug use report that older people tend to take many medicines simultaneously, and that this trend increases with age".(38)

Drug misuse of prescription and OTC drugs was studied among 67 elderly subjects in the United States. Of all the factors examined, only two were found to be significantly assosciated with drug misuse: use of two or more pharmacies, and having medications prescribed by two or more physicians.(47)

A social service agency in Michigan conducted interviews with 57 elderly who averaged 5 chronic illnesses and used an average of 11 drugs. Their drug behaviour was reviewed by University of Michigan pharmaceutical specialists. They found the most common problem was excessive medication where the subjects used OTC preparations with several prescription drugs. Although this study involved a small group of people, their drug behaviour, if typical, points to a serious "over use" of drugs that may be as prevalent among the elderly population.(53)

The problem of polypharmacy is commonly identified as a major factor in the misuse of drugs in the elderly.(30,48)

2.5 Patient habits antagonistic to drugs

This area of misuse comes from life style habits that along with some physiological changes due to aging can increase the risks of adverse effects from drugs.(41,46)

Alcohol consumption can cause adverse drug reactions in the elderly and the symptoms are frequently misdiagnosed by physicians. Older persons are probably not aware there can be adverse effects from alcohol use.(11,29,31,37,62)

Alcohol interacts with a large number of drugs commonly taken by the elderly. The incidence of alcoholism in nursing homes was estimated by Blose's studies at 40 to 60 percent. This coupled with high drug use common to nursing home patients can present some serious problems for the elderly.(23)

OTC preparations can be affected by alcohol. Aspirin can interact to exacerbate stomach ulcers since alcohol potentiates the effects of salicylates.(30)

About 20 percent of men over 60 are regular smokers. Nicotine can increase the metabolic rate and thus interfere with the effectiveness of drugs. Some side effects include weight loss, decreased pulmonary function and physical dependence.(48)

Four or more cups of coffee a day is consumed by 20 percent of older men. The potential interactions with drugs include hypertension and caffeine decreases the effectiveness of anti-hypertensives, antibythmics and antipanic treatments.(29) A daily intake of caffeine should be less than 600 mg.(30)

The effectiveness of drugs can also be reduced when absorption is delayed. This can be caused by erratic eating habits, changes in diet; inadequate fluid intake; states of anxiety and depression and the presence of OTC drugs such as antacids and laxatives.(37)

3.0 Strategies to reduce misuse

The literature reports a wide range of preventive strategies to reduce drug misuse by and to the elderly. Most authors' suggestions can be grouped within ten topics which involve:

1. Consumer education;
2. Physician prescribing practices;
3. Better utilization of pharmacists;
4. Drug monitoring programs;
5. Patient histories;
6. Re-education of physicians and psychiatrists;
7. Social interaction and support groups;
8. Better product containers, instructions and identification;
9. Advertising controls, and
10. Research opportunities.

3.1 Consumer education

Self-administration of both prescribed and OTC medications can lead to misuse where a patient unwittingly uses drugs inappropriately. Many authors[3,13,19,25,27,29,35,36] recommend educational programs that deal with the most frequent types of misuse such as:

- mixing pills in one container
- keeping expired drugs
- taking incorrect dosage
- borrowing drugs from another person
- not informing doctor of side effects
- not being able to read container labels
- using OTC drugs with Rx indiscriminately
- failing to take or abstain from food or drink when indicated, and
- renewing prescriptions when unnecessary.

McKim and Mishara suggest that pharmacists do not clearly explain the possible effects from the medications they dispense and physicians receive little training in the special aspects of prescribing for the elderly. These authors conclude that, "All persons involved in the drug dispensing and selection network must be involved if more and better information is to be made available to help people make more sane choices about drug use". "It is obvious that without government intervention, changes in drug related practices will not improve at a significant rate."[37]

3.2 Physicians prescribing practices

Before drugs are marketed they undergo clinical trials on young and middle-aged human subjects. Many of the drugs ultimately are prescribed to elderly patients who may be frail and suffering from the degenerative diseases of old age. This situation creates problems for the prescribing physician who is faced with possible adverse reactions in patients who may warrant special or complex dosage regimens.[62]

Suggestions for better prescribing practices are given by several authors who emphasize that the elderly have diminished organ (liver, kidney) capacity which can change the patients metabolic response to drugs.[37,44,50] This is important for prescribing drugs which have a narrow margin between therapeutic and toxic doses as in the cases of drugs for heart failure and Parkinsonism.[48]

Williamson[62] summarizes seven general rules for safe prescribing. Briefly, they include:

1. Make sure the drug is really needed;
2. Use placebos with discrimination and ensure it is inert;
3. Do a complete and accurate diagnoses;
4. Give as few drugs as possible;
5. Stick with well-tried drugs and use caution with new products;
6. Make prescribing instructions clear with proper container labelling; and
7. Start with a dose of about one-quarter to one-third of that recommended.

Other authors raise the issue of prescribing for the elderly because some health problems (2-20 percent) experienced by this group are caused by incorrent prescribing which is due; in part, to a physician being unaware the patient uses OTC drugs or may use alcohol or tobacco during the medication period.[12,14,21,24,29,38,39,44,48,56,57,65]

In British Columbia, less than 2 percent of fee-for-service physicians have a majority (more than 50 percent) of their patients over age 65. Consequently, there is limited opportunity for most physicians to gain experience in successful prescribing for their elderly patients.[52]

3.3 Better Utilization of Pharmacists

Pharmacists wish to maintain a standing as key members of the health care delivery team by enhancing their position as professionals. Services to customers are primarily product oriented, however, the elderly could benefit substantially from both a product and service oriented pharmacist.[6,42]

About 10 percent of all drug abuse studies of elderly patients deal with adverse pathologic and physiologic effects from inappropriate non-prescription drug useage. The elderly's use of these OTC drugs is high, especially for such preparations as analgesics, antacids, laxatives and vitamins.[38] Adverse effects from these are not uncommon among the elderly especially when taken in combination with other OTC products or prescribed medications or other substanes such as alcohol.[31] Here the pharmacist can play an important role in advising his client (patient/customer) of the risks of adverse reactions from OTC drugs or advise on the appropriate administration of these. Presently, it is incumbent upon the "consumer" to make his or her drug utilization known to the pharmacist and seek advice on possible problems from adverse interactions. The pharmacist's training and ready access to professional consultation make them key resources for the elderly who should exploit their expertise without hesitation.[38]

Many authors recognize the important role of pharmacists. However the elderly can benefit most when they choose one pharmacist to become knowledgeable of their particular health problems and medication regimens.(12,13)

Physicians can work closely with pharmacists to ensure the patient's medication is provided with labelling instructions that are clear and well understood.(21,15,44)

Cipolle advises in his editorial that pharmacists gather information concerning the effects of drugs on a patient's status and the influence of any altered physiologic state on the disposition of the drugs recommended.(9)

3.4 Therapeutic Drug Monitoring Programs

Many different approaches are suggested in the literature for drug monitoring.

Craig and Eves describe a pharmacy-based drug monitoring program that can determine the safety of elderly customer purchases of OTC preparations. This four step process includes scanning the customer's medication profile stored in the computer; checking this with a current purchase; then advising the pharmacist if a possible problem is detected; and if there is a problem, aborting the sale when agreed by the customer. Cost analysis data for their program is estimated at $0.06 per prescription filled, offset by the pharmacy.(14)

Another pharmacy based therapeutic drug monitoring TDM service, is outlined by Taylor and colleagues where access to a specialized TDM laboratory consultative service is available 24 hours a day, every day. Patient specimens (blood, urine, etc.) would be assayed; personal and medical histories would be scrutinized; drug information collected (dose, administration) and the purpose of the request (drug failure, absorption/clearance problem) detailed, all of which, would be used to scientifically determine ideal drug dosages. This system would require revenues ranging from $15 to $20 a day (U.S.). The authors emphasize the importance of a computer-based dosing program, particularly, as new patent drugs with highly variable pharmacokinetics are developed.(55)

The clinical pharmacokinetics laboratory in Stobhill, Scotland is available to all hospitals and general practitioners in the area. This service described by Whiting and colleagues uses a computer and experts in pharmacokinetics to assay drugs; report findings; assess the influence of clinical and pathological factors on the pharmacokinetics of drugs and implement and further develop a computer approach to determine the dosage of drugs. Every month the laboratory analyzes about 330 plasma concentrations. The authors believe that their TDM, although relatively new, will be a model for others to follow.(61)

Dr. Robert Rock of the Johns Hopkins Hospital in Baltimore (MD) promotes TDM in older patients. He says it has important implications for care of the elderly because physiologic changes associated with aging affect the function of organs involved in drug metabolism or clearance. Also, coexisting diseases in one or more organ systems may similarly affect the patient's handling of drugs and the frequent use of OTC agents may further complicate interactions with prescription drugs.(50)

Over a 3 year period at one U.S. teaching hospital, 18 percent of patients over age 61 had drug induced illnesses from OTC products. The drugs that are most commonly used by the elderly and which should be monitored include digoxin, gentamicin, barbiturates, propronolol, diazepan, tricyclic antidepressants, anti coagulants, theophylline, lidocaine and quinidine. Physicians should consider drug monitoring in the elderly who have reduced renal or hepatic drug clearance or are taking more than one drug with potential for interaction.(8)

Therapeutic drug monitoring is a relatively new tool which can assist the pharmacist to achieve their objective which is that each patient receives the right amount of drug. Monitoring is important to obtain information concerning the effects of drugs on a patient's status and the influence of any altered physiologic state on the disposition of the drugs recommended.(7,9,21,33,42,48)

3.5 Patient histories

J.C.A. Morrant, a psychiatrist, describes the use and abuse of psychoactive drugs in the elderly. This article concludes that careful history-taking, a physical examination, relevant investigation and treatment will usually result in an improved quality of the patient's life. The history-taking demands a careful look at all the patient's medications. Physicians must be aware of self-medications and of one's own tendencies to over-prescribe.(39)

"An accurate drug history is essential to any evaluation of possible drug induced reations". This advice from Clark and Vestal requires a physician to encourage patients to obtain prescriptions from a single pharmacy that maintains patient profiles. These can provide an excellent history of prescription drug use and perhaps drug reactions. These authors believe that a careful and thorough drug history and knowledge of drug related reactions are more helpful than an array of laboratory data.(12)

Dr. Richelson warns about the problems of prescribing psychotropic drugs to the elderly, especially those who use alcohol. Various psychotropic drugs interact with alcohol to cause adverse side effects. Therefore, depressive syndrome may be a drug induced state. Thus any depressed patient should have a thorough drug and alcohol history taken.(49)

3.6 Re-education of Physicians and Psychiatrists

McKim and Mishara describe a survey of the Texas Medical Association to determine the use and attitude of physicians toward tranquilizers. The physicians who were likely to prescribe these drugs often and for long periods of time were mostly (a) general practitioners, (b) in solo practice, (c) carrying a large patient load and, (d) out of medical school for a long time. These physicians also reported less training and experience in handling problems related to anxiety and less general knowledge about pharmacology. Half of today's physicians were in medical school when 70 percent of all drugs now available were unknown or not available.(37)

The WHO conference of experts on the Rational Use of Drugs convened in 1985 and outlined the main responsibilities of all those concerned in making drug use rational. They addressed universities, teaching institutions and professional organizations to, "improving training of various categories of health workers in the rational use of drugs; introducing the concept of essential drugs; providing continuing education; ensuring that drug symposia comply with ethical norms; and providing general information on proper health care and drug therapy". The Director-General of this conference posed seven specific strategies, one of which was training in rational drug use.(35)

Over prescription and overuse of psychoactive drugs by older people is linked to the physicians's lack of sufficient knowledge of the complex effects of many drugs. In this paper, Green reports many studies that identify the problems of prescribing without adequate knowledge and training in the needs of the geriatric patient. It is suggested that mental and medical health agencies advocate re-education programs for physicians and psychiatrists.(25)

3.7 Social interaction and support groups

Vickery and Fries in their publication, "Take Care of Yourself - A Consumer's Guide to Medical Care", offer some advice to older individuals with depression. To allieviate depression they suggest that the patient check their medication because tranquilizers, analgesics and anti-histamines can cause depression. Then the patient is advised to seek social interaction by visiting friends, taking a vacation and many other pursuits that cause the patient to "work at life".(58)

The National Advisory Council on Ageing published a speech delivered by Dr. Paul David at Sherbrook University in 1982. He described the abuse of medication as a real scourge of our society because it aids the caregiver but encroaches on the elderly persons's autonomy. Integrating the elderly into the community where they can come in contact with people and partake in recreational activities will give the elderly feelings of self-worth. Those over age 65 can still offer society their wisdom, experience and perspicacity. Proceedings of this conference are available from Secretariat de l'Association, 4625 Lorimer Ave., Montreal, Quebec, H2H 2B6 for $16.

Pfeiffer warns that when treating pain a physician should avoid drugs if possible. Simply taking the time to talk with and listen to a patient may be sufficient treatment for pain. Particularly in the elderly, the role of loneliness and depression in the production of pain should not be underestimated.(45)

"Research Issues 32" reports the finding of Creedom. Twenty nursing homes (4 non-profit) were studied for the use of psychotropic drugs among 30 residents in each facility. Social interaction of residents with their families seems to be related to less use of psychotropic drugs. Nursing homes with frequent and varied organized activities that gain participation from a significant proportion of the resident population are less likely to depend on psychatropic drugs than homes that fail to engage residents in such activity was concluded by the author.(18,21,22)

"Social network intervention" methods should be included which emphasize direct involvement of all members of the subjects social network, suggests Garrison and Howe (1976) as reported by Green. Other authors referenced by this article describe other opportunities of social interaction. These could include telephone hot lines; families, friends of older people and participation in a variety of growth groups such as recreational activities and encounter gatherings.(25)

3.8 Better product containers, instructions and identification

When a patient receives a prescription from his doctor, it is assumed the drug will be used appropriately. However, some researchers have found rather basic problems thwart the elderly's opportunity for the therapeutic benefits expected.

The 1979 survey of 146 elderly by Simon Fraser University found a number of factors that posed substantial difficulties to patients. Inaccurate interpretation of label directions occurred in more than half of the interviews, where dosage and scheduling errors were substantial. The "opening" directions of vials were not considered adequate as the subjects had problems opening the child-resistant recloseable containers. For elderly who are solely responsible for their own medication administration, the report recommends prior instructions for the proper use of a drug with perhaps auxiliary labels in larger print. These types of problems are emphasized in the "abstract" of this report.(13)

According to Hurd and Butkovich the older patient has "functional limitations" that influence medication therapy-getting the medication into the body. Decreased muscle strength, visual activity, impaired colour vision, declining memory and other changes can all become barriers for the patient. The child-resistant containers were found to be significantly more problematic for older compared to younger individuals. Four of 14 older people couldn't remove caps from CRC bottles. Errors occurred when interpreting labels for scheduling their medication. This study suggests that as people age past 75 these types of problems will increase and pharmacists could test the potential problems older individuals have with their medications.(28)

Law and colleagues state that more could be done to ensure the legibility of instruction on drug labels. Prescriptions should have more specific information and indicate the action/purpose of the drug. These authors report that Dunnell and Cartwright found that 9 percent of drugs they examined were not identifiable even after referring to a hospital poison-unit.(32)

One hundred and eighty-three elderly living in subsidized housing were interviewed by the Ostrom researchers. They found the most frequent medication problem (33 percent) was incorrent labelling as a result of a dosage schedule change made by the prescriber. Those elderly who could not read a label represented 14 percent and a further 12 percent could not open the childproof containers.(43)

An overview of elderly medication problems by Basen states that misuse of drugs is often due to a lack of practical information or instruction on appropriate use. Misunderstandings result as for instance when prescriptions state, "as needed". A prescription instructing the patient to "take as needed " can lead to misuse. More specific labelling is required.(4)

3.9 Advertising Controls

In 1978 it was estimated that drug companies spent about three-quarters of a billion dollars in the United States for advertising aimed specifically at doctors. Green's article suggests that advertising for drugs has not only increased sales but also has softened and molded public attitudes toward the practice of taking drugs. He quotes Silverman and Lee as saying, "the mass media have whetted the public appetite for the lastest wonder drug..." and radio and television must accept a considerable amount of blame for the irrational self-drugging of patients with over-the-counter remedies". Green gives several examples of advertisements in geriatric journals that promise to provide remedies for "the management of uncooperative behaviour". This type of advertising places pressures on physicians to prescribe and possibly endanger lives which professionals claim to protect. It is suggested that legislative guidelines be strengthened on the advertising of psychoactive drugs. In the Scandinavian countries drug advertising is controlled.(25)

The WHO in 1985 through a team of experts, has developed strategies for the worldwide "Rational use of drugs". They suggest each country should have a national drug regulatory authority. One of the main responsibilities would be to ensure the mass media provides relevant and balanced information on health matters including drug therapy; sharing in public education on the proper use of drug therapy; giving favourable publicity to those complying with the ethical norms of drug advertising and unfavourable publicity to those not complying. The 39th World Health assembly in 1986 was to have proposed revised drug strategies and one is the promoting ethical norms for drug advertising.(35)

Whittington's book "Drugs and the Elderly" is summarized by "Research Issues 32" and points toward the drug industry as being partly responsible for drug misuse. It is suggested most advertisements minimize the real and potential dangers of the drug they extol. Major policy changes are needed to control the misuse of drugs by the elderly.(20)

3.10 Research Opportunities

The literature describes many different aspects of drug misuse that could benefit from research.

The clinical trials of new drug products typically use healthy animals for testing. Later, if indicated, human subjects are used which includes primarily young and middle-aged males. Many of these drugs are used mainly on the elderly who are largely females and may be suffering from many diseases and degenerative problems. This can result in adverse reactions and dosage regimen difficulties. More research is needed on the pharmacokinetics of elderly male and female patients.(62)

Ouslander describes some important areas where research may help to manage the complex process of treating the elderly with drugs. These include: age-related biologic, physiologic and pathologic changes, and how they may influence clinical pharmacology; observations on the natural history of untreated illnesses in the elderly; pharmacokinetics studies that address the issues of cross-sectional research, polypharmacy, and multiple undulying illnesses; further research on the mechanisms of altered receptor sensitivity with increasing age; intensive study of psychoactive drugs that are safe and effective in treating behavioural disturbances, affective illness and cognitive impairment in the elderly; and more randomized, double-blind, placebo-controlled studies that involve elderly subjects.(44)

Regular use of mind-altering drugs can cause a problem to the elderly.(26) Prospective studies are needed to assess the physical and psychological risks of longitudinal and frequent use of psychoactive drugs.(64) The level of psychoactive administration warrants study too.(4)

Several authors see the misuse of drugs by the elderly as an educational challenge. Research could offer new directions in international strategies for use by health care professionals to reduce drug misuse. It would be important to examine the relationships between mass media behaviour changes and community support programs.(3,35,47)

McKim and Mishara suggest that longitudinal studies are needed to evaluate what physiological differences in older people are due to the aging process or to different variables (nutrition, upbringing, environment, etc.) when the elderly were young.(38)

SUMMARY

Many authors have reported aspects of drug misuse by the elderly indicating growing concern for this societal problem. Past successes with the anti-microbial "wonder drugs" such as penicillin has probably created a consumer level of expectation that there is a medication for most illnesses. The manufacturers of drugs have unlimited opportunities to try to fill these expectations. The aging process coupled with long term behaviour such as smoking, drinking, inactivity, malnutrition, stress and other environmental problems can result in a continuum of morbidity for the elderly. Ignoring the lifestyle causes and remedies, where the patient can accept responsibilities, the physician may opt for quick technical relief by regulating his patient with drugs.

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ALCOHOL MISUSE IN THE ELDERLY

4.0 Historical Perspective

4.1 Useages

Tracing the history of alcohol use shows its role in the religious, medical and social aspects of world culture. Today, alcohol is more a part of our social world where availability and consumption continues to increase.

The consumption of alcohol dates back more than five thousand years, when the Sumerians used wine for festive occasions and as "the medicine for old people".

In ancient Egypt, the aged took a distinctive place at domestic and religious occasions where wine was used to represent a relationship with the deities.

Wine was featured by the Hebrews for religious ceremonies and as an antiseptic. It was used as a topical anti-infective agent for centuries.

Omar Khayyam's "Rubaiyat" attests that wine was used by the Persians around 1000 A.D., as psychological comfort for people who were confronted by the impairments and losses associated with old age.

Biblical references of wine describe it as an "antidepressant and obliterator of painful memory and consciousness". Poverty, misery and fear of abandonment were realities to many aging people of early biblical times, and if one could not enjoy health, love and security then one could be passed the comforting jug.

During the thirteenth and fourteenth centuries alcohol was used as a mouthwash and topical antiseptic.

Sherry was prescribed to prevent plague during London's catastrophic 1665 epidemic.

The pre-anesthesia period saw medical gentlemen prescribe strong drink for patients suffering pain or shock.

Through history, alcohol (wine and beer) was used for medical purposes and religious ceremonies. However, alcohol abuse gained momentum when the 17th century dutch medical professor Franciscus Sylvius distilled a concoction that was called "junever", referring to the juniper herb to mask its unpleasant taste. The British called it gin.

It became clear to the British government that money could be made from changing grain into gin. In 1690, they passed "An act for the Encouraging of Distillation of Brandy and Spirits from corn". This

occurred during the emergence of political parties (Whigs and Tories) and a significant war debt (14,000,000 pounds) followed by loss of some colonial power (income). In 1742, about 20 million gallons of spirits were produced and consumed in England.

Eighteenth century England experienced a major urbanization of people looking for a better life. The new life for many meant misery, poverty, disease, pollution and crime where most ended as slum dwellers. Cheap strong drink bred patterns of destruction in human lives. The government took action by increasing the tax on spirits.(52,70)

5.0 Understanding Alcohol Misuse in the Elderly

For the elderly, it is difficult to decide where heavy drinking ends and abuse begins. The quantity or frequency of drinking is not always relevant because usually there is an increased susceptibility to alcohol with aging (see 7.6). It is easier to tell who is and who is not addicted to alcohol but there is a wide, fuzzy margin in the middle.(11,70)

Alcoholism or alcohol addiction may be briefly described as the "inability to stop drinking once having begun".(53)

Misuse pertains to the undue consequences of drinking. If alcohol use interferes with a person's ability to function normally (including socially) or damages the person's health or well-being, it can be described as misuse (abuse).(6)

Apart from alcoholism, many authors use a variety of terms to describe this misuse behaviour. The terms are used interchangeably and include: alcohol abuse, alcohol problem, heavy alcohol user, alcohol impaired, alcoholic, problem drinker, acute alcohol intoxication, alcoholism risk and chronic drinker.

It may be appropriate to regard the misuse of alcohol by the elderly as a multidimensional issue and an understanding of it would require an analysis of the psychosocial, physical, economic and legal aspects associated with this problem. (1,6,11,29,33,50,51,75,79,80)

6.0 The Extent of Misuse

Prevalence statistics reported in the literature vary according to the particular population group under study. They differ mainly according to the age group, sex, setting and problem description. Table 1, in this review, shows the wide range of percentages found or reported by authors investigating elderly alcohol use. This table is not exhaustive but shows the need for a more concerted effort by researchers to define and assess the extent of this problem.(7,11,25)

The exact rate of alcohol misuse in Canada is not known but a conservative estimate indicates 10 to 15 percent of the elderly population is involved.(11,51,62,81)

TABLE 1

Occurrence of Alcohol Misuse among Elderly Reported in Literature

Description of Problem	Occurrence (%)	Age Grouping Description	Setting	Reference Number	Year
alcoholism	1	older persons	rural and urban communities (USA)	36	1984
alcoholism	1-5	over 65	general population	58	1974
alcoholism	2-10	over 60	general population	67	1965-73
active alcohol abusers	2-10	older adults	community	8	1971
problem drinkers and alcohol-related problems	4	60 or older	community	50	1982
problems associated	4.5	65 and over	national	78	1978-79
heavy drinker	5	60 and over (female)	national	65	
alcohol problem	5-9	elderly	medical ward admissions	1	1983
heavy drinkers	7	over 65	general population	27	1981
alcoholics	9	over 65	general population UK	30	1985
problem drinker	10	over 60 (males)	general population	82	1978
problem drinking	10	over 65	general population	11	1988
drinking problem	10	over 65	general population USA	3	1987
alcoholism	10-15	over 65	community	79	1965/73/78
heavy drinker	11	60 and over	U.S. national probability sample	54	1969
alcoholic	12	geriatric patients	geriatric psychiatric outpatients	80	1969
alcoholic	13	geriatric patients	medical home-care	80	1971
alcohol and drug abuser	14	age 55 and over	housing residents and social service clients	6	1983
alcoholic	15	seniors	community	9	?
alcoholic	17	65 and over	mental health centre suburban New York	81	1972
active alcohol abuser	20	elderly	institutionalized	8	1971
alcoholism	20	elderly	nursing home population	82	1978
heavy drinker	20	60 and over (male)	national	65	1970-78
heavy drinkers or alcohol abusers	21	over 50	Outpatients at Alzheimer Clinic	34	1986
heavy drinkers	24	60-64	general population	27	1981
heavy drinkers	25	60-69	community probability sample	2	1979
alcohol problem	44	elderly	psychiatric screening unit	1	1983

A 1984 report published by National Health and Welfare Canada states that the proportion of male seniors who drink every day was 21 percent whereas the national average for all males is 16 percent and females 4 percent both for seniors and all females. Further, 42 percent of male and 15 percent of female seniors drink at least once a week. This report shows that drinking patterns and problems differ significantly among the provinces general populations. British Columbia has the highest percentage of both women and men who are current drinkers, the highest rate of death from chronic liver disease/cirrhosis and the highest proportion of drinking associated problems among current drinkers. These statistics were compiled from the 1981 Canada Health Survey.(78)

Although these statistics on drinking patterns reflect all ages, they are important because about two thirds of elderly problem drinkers began early in life (early onset) and the elderly population is growing(26) due to high post war birth rates and declining contemporary rates.

Those who start drinking early in life may have different drinking habits to the next generation, hence cross-sectional consumption differences by age (cohort comparisons) don't necessarily reflect the effects of aging.(20,21,49)

6.1 Misuse Rates Under-estimated

Many authors state that prevalence statistics are under-estimates. (1,7,9,11,27,30,36,37,56,58,60,62,80,81)

Most reasons for these under estimations relate to the following:

1. Alcoholism can be a hidden condition and its symptoms may be confused with manifestations of mental or physical disorders.(1,30,36,37,60,63)

2. Physicians, medical staff and medical students don't recognize the early stages of alcohol dependency and misuse.(1,7,9,11,14,30,33,51,56,82)

3. Manifestations of alcoholism are more subtle in the elderly and result in fewer physical sequelae.(1,9,80,82)

4. The elderly do not fully utilize alcohol treatment centres just as they under-utilize mental health resources in general.(7,8,9,27,30)

5. There is a decreased survival rate of younger alcohol abusers resulting in selective attrition of the older population therefore this group is perceived to show a reducing rate of abuse.(3,8)

6. Inaccuracy in detection methodology.[3,62,63]

7. Social devaluation of the elderly[7,9,11,37] and,

8. Denial of the problem because of social stigma.[11,30,34,75]

6 2 Risk Groups for Alcohol Misuse

The literature reports different occurrence trends of alcohol misuse among elderly sub-populations.

Zimberg reports that community-based studies show 2.2 percent of elderly (65-74 years) have alcoholism but this rate rises to 10.5 percent among widowers. Also, alcohol is implicated in 23 percent of hospitalizations.[80,81]

Estimates from the National Institute on Alcohol Abuse and Alcoholism (1971) indicate from 2 to 10 percent of older adults abuse alcohol whereas for those institutionalized (hospitalized) the percentage is closer to 20 percent.[8]

Atkinson and Kofold suggest that alcohol abusers over 65 are likely to be admitted to a general hospital because of a greater tendency for associated medical problems.[1] Others support this view.[9,36]

In nursing home populations, it has been estimated one-fifth suffer alcoholism[13,82] and 15 to 25 percent of all elderly medical and psychiatric ex-patients and out-patients are problem drinkers.[3]

Drinking problems were found in 25 percent of older males admitted to hospital psychiatric wards. This 1972 finding by Zimberg is reported by Brown (1982) and he states further that, "older problem drinkers are regarded as familiar but generally undesirable clients in a variety of community agencies".[7]

National surveys from 1971 to 1975 in the United States found 2 percent of women and 8 percent of men over 65 were alcoholics and incidences of alcoholism usually increase in populations of widows, nursing home residents, and medical patients. These findings were summarized from several studies by Price and Andrews.[62]

General hospital studies show serious drinking problems occur in elderly patients and 15 to 38 percent involve men and up to 4 percent women.[60] Cohen agrees elderly males out-number the females and suggests a ratio of 4:1. He argues that females must contend with a triple stigma of being elderly, being female and being alcoholic.[11]

The high risk groups for elderly alcohol misuse appear to be widowers, institutionalized males or those receiving medical care. For the last category it is not clear in all cases whether the alcohol caused the medical problem or the medical problem led to the alcohol problem. Perhaps both situations exist. Istvan's paper presents convincing arguments that identify smokers and manual trades' employees as a higher risk group for alcohol intoxication compared to non-smokers.[32]

6.3 Two Groups of Alcohol Misuse Onsets

Alcohol misuse is categorized by a number of authors into two distinct groups - early onset and late onset.[1,8,9,15,37,60,62,79,81]

About 70 percent of older alcohol abusers are young alcoholics grown old - "the aging alcoholic".[8,15] This person has been drinking all his life and has survived the long term effects of alcohol and may have had significant alcohol related problems throughout most of his/her life.[60] This group seems to have personality characteristics similar to the younger alcoholics'.[79] The other group of 30 percent comprise the "geriatric problem drinker" who began heavy drinking late in life.[8] This drinking behaviour is usually in response to the stresses of aging such as depression, bereavement, retirement, loneliness, marital stress, physical illness and reduction in the social network.[2,3,6,8,15,60,62,79] One author believes alcohol problems are due to human relations and not to physical problems.[50]

Atkinson and Kofold give a clinical perspective with some arguments against the "early-onset" and late-onset" distinction. It provides too simple a classification because both groups may share common features and seem to respond to the same treatment approaches. Also, there is evidence alcohol abuse runs a regular course with spontaneous recovery after 20-25 years and the two stage model doesn't address family alcohol use.[1]

Zimberg suggests that in discussing the problem of elderly alcoholics it is necessary to distinguish between the geriatric alcoholic and the aging alcoholic.[81]

7.0 Effects from alcohol misuse in the elderly

The list of alcohol's ill-effects on the elderly is extensive.[23,30] Scientific research reported in the literature confirms such problems as liver disease, brain disease, heart-disease and other well-known consequences, but it is also discovering links with diseases whose etiology is incomplete (Altzheimer's disease, osteoporosis).

Table 2 lists some of the problems a number of authors attribute to alcohol and is not intended to over-state the consequences but to show the potential advantages for the control of its use to lessen the elderly's burden of unnecessary illness.

TABLE 2

Problems related to alcohol misuse reported in the literature

Mental (Reference #)	Physical (Reference #)	Social (Reference #)
- major or heightened depression (1,11,29,32,75)	- diabetes, chronic bronchitis, lower muscle strength, gonad function, pulmonary function, visual acuity, walking ability and skeletal density (48)	- falls and accidents (1,27,30,33,57,72,78,79)
- subacute organic mental disorder (24)		- diagnosing problems (mis-diagnosis) (9,58,67)
- anti-social person-ability for males and major depression for females (11,29)	- obstructive.pulmonary disease (67)	- motor vehicle accidents (65,72,78)
- impairment of intellectual functions (1,11,48)	- Cirrhosis, seizures, cardiac disorders, gastrointestinal disorders (5,67,77,78,81)	- suicide (8,33,65,78)
- confusional states (67)	ulcers (32)	- walking ability - (11,48)
- dementia (1,30,34,43,46)	- cancers of the mouth, pharynx, larynx, esophagus and liver (12,40)	- fire, drownings (72,78)
- chronic brain syndrome (80,81)	- stroke (13)	- homicide (33,78)
- delirium tremens (37)	- pressor effect (9,22,61)	- marital problems and interpersonal relationships (1,11,16,50,57,72,79,80)
	- bone disease (4,28,48,71)	
	- acetaminophen hepototoxicity (68)	
	- anti-anxiety medical-tions interactions (benzodiazepines, alprazolam, and others(3,11,65)	
	- Alcohol poisoning (64,65)	
	- malnutrition (11,30)	
	- declining immune response (11)	

7.1 Dementia

A 1983 study was conducted on out-patients at the Johns Hopkins Hospital Alzheimer out-patient clinic. The aim was to assess the prevalence and pattern of alcohol abuse and determine any relationships between alcohol consumption and dementia. Twenty-one percent of 65 patients attending the clinic were reportedly heavy drinkers or alcohol abusers at some time, 64 percent of whom were active drinkers at the onset of dementia. The author suggests that clinicians need to be alert to the possiblity that alcohol may be an aetiological factor in their elderly patients with dementia.(34)

Patients admitted to a neurological hospital in Britain (1972) were investigated for dementia. Of 104 with a presumptive diagnosis of dementia, 84 were confirmed to be intellectually impaired and in 48 of the 84 (57 percent) no firm diagnosis was made. However, in 7 percent of the confirmed cases, prolonged excessive use of alcohol was implicated. Here, the alcohol was associated with cerebral atrophy. The authors emphasize the importance of full psychiatric and neurological investigations of patients with dementia in the presenium.(46)

From computerized tomography (CT) studies and necropsy measurements, the alcoholic brain is shown to have reduced weight, considerable enlargement of the pericerebral space and enlargement of the ventricles. It appears that the cerebral function continues to deteriorate with persistent alcohol use. However, at this stage of research, incontrovertible evidence is lacking to link alcohol with states of pronounced dementia. Brain degeneration in certain areas (nucleus basilis of Meynert) has been incriminated in nerve impulse transmission degeneration (cholinergic depletion) as seen in Alzheimer's dementia and this degeneration in alcoholic patients seems to have a primary role. The similarity between alcoholic dementia and Alzheimer's disease is that the two disorders have analagous neurochemical deficits, but of different origins which may account for cognitive difficulties of alcoholics without profound dementia. Further investigations could be done at necropsy to clarify the brain pathology in Alzheimer patients among those with and without an alcoholism history.(43)

7.2 Common Mental Disorders

Mental disorders associated with alcohol abuse appear to be underestimated in the elderly. Alcohol problems are seldom detected by primary care physicians and alcoholics with mental disorders have a high mortality rate.(29,33) Epidemiological data relies on respondents to give accurate answers. The elderly may not be accustomed to survey questioning by strangers about the intimate aspects of their lives especially by government agencies. Consequently, the validity of data reflecting elderly drinking behaviour may be reduced and thusly reflected in study findings.(54)

Prevalence statistics on hospitalized elderly alcoholics will have greater credibility, however such data reflect a group whose drinking problem is probably different from those elderly who are not institutionalized. Nevertheless, some authors report on their findings but offer judicious cautions regarding interpretation.(33,50)

It is reported that among psychiatric disorders, major depression precedes the onset of drinking problems in up to 5 percent of hospitalized male alcoholics and up to 25 percent of female alcoholics.(1) Phobia was also found common among hospitalized female alcoholics and anti-social personality among male alcoholics.(29)

Also, mental depression may result from or be exacerbated by excessive drinking and it is known that persons who commit suicide are likely to have been dependent on or abusers of alcohol.(73) During 1986 in British Columbia 21.5 percent of all suicides (n=419) were committed by the elderly (65+) who comprised about 12 percent of the population.(74)

Other mental disorders associated with alcohol misuse include lower cognition, paranoid behaviour, memory loss, confusion, self-neglect and personality deterioration.(11,19,29,48,67)

7.3 Adverse Interactions with Drugs

Alcohol interacts with more than 150 commonly prescribed medications.(3) Since the elderly are heavy drug users, those who drink are especially vulnerable to adverse reactions. Paradoxically, elderly alcoholics have an increased tolerance to drugs when sober but an increased susceptibility when intoxicated. Metabolic competition between ethanol and drugs changes their susceptibility to drugs.(55) Both prescribed and over-the-counter (OTC) preparations can react with even small quantities of alcohol to produce marked behavioural and organic mental function changes.(79)

The discovery of benzodiazepines gave clinicians a safer anti-anxiety drug which had a decreased potential for overdose deaths and less potential for addiction. However, benzodiazepines can be lethal when ingested with high enough doses of alcohol.(65)

Moderate doses of acetaminophen (Tylenol) taken by chronic alcoholics can result in unusually severe liver disease. This analgesic OTC preparation when taken in moderate or therapeutic doses by alcoholics develops hepatotoxicity. Relatively few cases of this interaction is known which may be indicative of the failure to recognize the liver disease as an interaction effect due to alcohol.(62)

7.4 Alcohol and Smoking

Alcoholics are usually heavy smokers. In 1979/80, the Alcoholic Research Foundation of Toronto found that 86 percent of male alcoholics were smokers and 47 percent of these smoked more than 25 cigarettes per day. In comparison, 42 percent of the male general population were smokers and 18 percent consumed more than 25 cigarettes per day. Similarly, 82.4 percent of female alcoholics smoke with 34 percent using more than 25 cigarettes per day compared to the general population of females where 34.1 smoke and 10.3 percent consume more than 25 per day.(40) Other studies reviewed show consistently that heavy smokers were more likely than other groups to be heavier drinkers.(32) This heavy cigarette use by alcoholics has serious health consequences. Epidemiological data shows that alcohol "interacts" with smoking and each agent enhances the other's effect (synergism). It has been suspected for about 60 years that cancer of the mouth, pharynx, larynx and esophagus were more prevalent in tradesmen where alcohol consumption was encouraged. Also, it is observed that oral cancer occurs among habitual users of strongly alcoholic mouth washes. Now, it is reported that the combination of both alcohol and tobacco exposure seems to cause an increase in the risk of oral cancers which greatly exceeds the sum of the two separate risks. Most of the 3 percent of cancer deaths now caused by alcohol could have been avoided by the absence of smoking, even if alcohol consumption remained unchanged.(12) From a U.S. cancer study, the number of cases of laryngeal cancer occurring among drinkers who smoke is 50 percent greater than the number expected if effects were simply additive.(17)

Cigarette smoking among alcohol abusers appears to cause a health hazard that warrants the simultaneous treatment of both problems.

7.5 Bone disease

There are several possible explanations for bone mass reduction in the alcoholic. Patients may use antacids for gastrointestinal complaints. The combination of alcohol and aluminum-containing antacids has a synergistic effect on inducing significant bone loss. Poor nutrition can result in an inadequate intake of calcium, vitamin D and protein. Alcohol can impair the metabolism of vitamin D and the intestinal absorption of calcium. Calcium loss also occurs from increased serum parathyroid hormone levels and plasma calcitonin levels which can be manifested by the acute ingestion of alcohol. These endocrine and metabolic changes can lead to acute calcium loss from bone which eventually causes osteoporosis.(71)

Bikle and colleagues studied bone disease in healthy men who ate regular meals and had normal serum levels. These subjects were heavy drinkers but none were malnourished. Biochemical, radiologic and histomorphometic values were obtained from both cases and controls. The data suggests that alcohol directly inhibits bone remodeling. The authors conclude that long-term abuse of alcohol is detrimental to skeletal integrity. All eight cases had radiologic evidence of osteopenia and compressed vertebrae.(4,48)

Spencer and co-workers report a larger study of 96 male veterans admitted to hospital for alcohol rehabilitation. They found 47 percent had osteoporosis as demonstrated by radiography. This process must have been present for a prolonged period because 30 percent of bone mineral content must be lost before osteoporosis can be demonstrated roentgenographically. Blood chemical values were not significantly different in those with and those without osteoporosis. From liver biopsies, it appears osteoporosis is independent of the presence of cirrhosis as this diagnosis was made on six patients with osteoporosis and eight without osteoporosis. Fractures in the elderly and symptoms such as back pain may indicate the presence of osteoporosis which is frequently over-looked and commonly minimized in the presence of other alcohol related complications.(71)

If bone disease can occur as a direct consequence of alcohol without significant biochemical changes or hepatic damage then perhaps a patient's alcohol history may lead to an explanation for extensive bone loss.(28)

7.6 Alcohol Metabolism and Aging

A small amount (5-10 percent) of ethanol is excreted by the body and more than 90 percent is metabolized in the liver by alcohol dehydrogenase where it is oxidized to acetaldehyde. The toxic damage of alcohol on the liver is due partly to the generation of acetaldehyde, itself highly toxic. The alcohol dehydrogenase activity does not decrease with age. The elderly have diminished total body water which reduces the volume of ethanol distributed throughout the body. Therefore, even though the amount of alcohol drunk by the elderly may decrease their sensitivity to the effects is greater.(14,30)

7.7 Associated Health Problems

The aging process renders the body more susceptable to disease. Therefore, the effects of alcohol may be wrongly attributed to age or dementia. Heavy drinking may also exacerbate health problems and co-existing disease. Unfortunately, alcohol may be overlooked as a source of morbidity and mortality in the elderly.

Late onset problem drinkers and the elderly experiencing declining bodily functions may share the common difficulties of memory loss, confusion, depression, irritability, insomnia, sexual dysfunction, malabsorption, anemia, pancreatitis, cardiovascular toxicity, declining immune response, malnutrition and accidents (falls).[11,30] The detection and treatment of elderly alcoholics can be important because older alcoholics respond more favourably to treatment and consume disproportionately larger medical care resources than younger alcoholics.[41,62,64]

7.8 External Problems

The effects of alcohol on the elderly's physical (musculoskeletal) and mental (depression) attributes probably impacts their safety and security. Studies show the elderly are especially vulnerable to falls and accidents.[1,27,30,33,48,57,72,78,79] This includes motor vehicle crashes.[8,33,65,72,78]

8.0 Inborn Alcohol Abuse

Some early onset elderly alcoholics may have had a predisposition to their drinking problem. Research articles based on studies in Sweden, Denmark, England and the United States have discussed the concept of inborn alcoholism.[10,31,32,35,54,66,76] A brief editorial (Lancet) suggests, "alcoholism shows a tendency to run in families and there is convincing evidence from 'twin' studies that alcohol drinking behaviour is partly under genetic control".[31] Studies show that adopted children of alcoholics have four times the risk of developing an alcohol problem than controls but children born of non-alcoholics but raised by alcoholics do not appear to have this risk factor.[73] Also, identical twins are twice as likely to both becoming alcoholics compared to both fraternal twins when there is common parental alcoholism.[66]

A 1961 Danish case-control study (n=134) matched high risk sons of alcoholics with a low risk control group without known parental alcoholism (n=70). At age 19 assessments were following a small dose of alcohol, the high risk group showed significantly decreased fast alpha energy in resting electroencephalograms compared to controls suggesting sons of alcoholics may be more sensitive to alcohol.[72]

Schuckit warns there is no justification for solid conclusions on this genetic hypothesis as the indicators and confounders are complex and can differ with the sample selected. He suggests that nobody is predestined to becoming an alcoholic but genetic factors increase or decrease the level of vulnerability toward this disorder by a change in the intensity of reaction to ethanol.[66] Measuring the body's reaction to ethanol (acetaldehyde levels) is also problematic and hence the genetic link goes unproven.[76]

9.0 Treatment Problems

A number of authors agree that with appropriate treatment the prognosis can be good for elderly problem drinkers or alcoholics; especially the "late onset" group. Ironically though, the elderly tend not to seek help nor are their families likely to admit there is a drinking problem.(1,8,9,39,44,47,59,62,75,82)

Dr. Low, a McGill psychiatrist at the Montreal General Hospital, says that primary treatment for alcoholics should be provided by the family practitioner. "Unfortunately, family practitioners are not assuming this role with any regularity, effectiveness or enthusiasm", claims Low.(44)

At London's St. George's Hospital, the Registrar states that only 10 percent of elderly alcoholics are recognized as such by their doctors. Detection is made difficult by patient denial, social isolation, collusion by family and friends, and the doctors' tendency to attribute the effects of alcohol wrongly to age or dementia(30).

A 1982/83 survey of admissions to an Australian hospital shows that alcohol-related diagnoses are under-reported. The authors suggest more attention needs to be directed to the education of medical students and staff members in the recognition of alcohol dependency and misuse, so that more serious complications might be minimized by effective intervention.(56)

Zimering cautions that even if the family physician can diagnose an alcohol problem, what services are available! In the United States, alcoholism services are not geared to aged alcoholics and geriatric services usually have not recognized the severity and prevalence of alcohol related problems among clients.(82)

Dr. Ogborne, who is senior scientist at the Addiction Research Foundation (Ontario), believes Canadian health ministries are concerned about additional hospital-based inpatient units for the treatment of alcoholism because of the costs. He also feels that once the patients' medical problem has been treated, the alcohol-related problem could be treated in outpatient or day-care settings.(44)

Family physicians are in a particularly good position to identify problem drinking in its early stages. According to McIntosh, problem drinking can be recognized by psychosocial and medical indicators. Also, thorough history-taking or the use of a specific questionnaire should provide confirmation. Here, the Michigan Alcoholism Screening Test (MAST) and the CAGE questionnaire can be very useful in assessing patients.(47) "How to spot the elderly alcoholic" is a matter of noting particular clues, according to Hyatt. This author gives a three-stage diagnoses protocol that uses the MAST and CAGE questionnaires. However, he notes that self-neglect - hygiene and diet - is a common presenting feature of the elderly alcoholic.(30)

Dr. Peter Kogan, Assistant Professor of Family Medicine at the University of Washington, and experienced in alcoholism projects, says that there is not much of an opportunity to integrate alcohol topics into medical school cirriculae. Also, some medical school doctors regard it is a moral issue. Kogan believes that alcohol-related problems are so widespread that any health care professional should have awareness about the role alcohol plays in a person's medical or personal problems.[14]

9.1 Treatment Methodologies

Treatment programs cited in the literature involve a wide range of interactions. Some use simple verbal encouragement while others may require hospitalization with medical care. Authors suggest that the treatment needs to be individualized for some clients and for group outpatient settings, the elderly should be among their peers. To gain the best advantage from existing programs, it is recommended that service agencies be coordinated to allow the geriatric alcoholic to benefit from a continuity of treatment that targets the specific problem(s). This could involve financial, health, marital, social or other problems the person cannot surmount without help.
(4,7,9,15,18,34,37,42,45,59,62,63,75,79,81)

The Florida Mental Health Institute studied the Gerontology Alcohol Program (GAP,) which treats later-life onset alcohol abusers. Potential clients were screened according to five areas: physical health, mental health, family and social adjustment, financial stability and legal status. Suitable candidates were then enrolled in a series of four treatment groups which were essentially instructional. They included:

1. Analysis of Drinking Behaviour (antecedent behaviour).
2. Self Management in High Risk Situations (how to avoid situations for abusive drinking).
3. Alcohol Information and Education (medicine, psychological, statistical and theoretical aspects of alcohol abuse).
4. Problem Solving (identifying problems and finding solutions).

The average age of onset was 58, and clients were daily drinkers prior to admission to GAP. Death of a spouse was the most frequent event leading to abusive drinking. One half of admitted clients did not complete the program and all clients who completed did not return to their abusive pattern of alcohol consumption. Improved social networks were found important for clients to maintain reduced drinking and avoid alcohol abuse[15].

Carstensen, Rychtarik and Prue described an Alcohol Dependence Treatment Program (ADTP) for veterans over age 60. The ADTP is a 28 day voluntary inpatient service that involves medical care, individual counselling, education, training in self-management and problem solving skills. They found 71 percent of late onset alcohol abuse

began drinking at retirement. Results show 62 percent of patients two or more years after the program had abstained (50 percent) or modified (12 percent) their drinking behaviour. The authors conclude that the program attests to the effectiveness of treatment for elderly alcoholics.(8)

A treatment strategy was developed by a University of Toronto clinical psychologist (Martha Sanchez-Craig) for patients who were chronic alcoholics or early onset problem drinkers. The family physician plays the central role by identifying the alcohol abuse and implementing the treatment. Identification is accomplished using a checklist of indicators of which 12 are psychosocial; two are laboratory tests, and 14 are clinical symptoms and signs. Once identified, the patient's alcohol use is gradually modified using some "safe drinking" patterns or rules such as: "Do not drink daily"; "Limit yourself to four drinks daily"; and "Never exceed 20 drinks weekly." Consumption is gradually reduced until a safe pattern is achieved and, concurrently, advice is offered on the problems of daily living. This strategy is implemented in two sessions of 30 minutes, conducted biweekly. The patient keeps a record of drinking behaviour which is brought to each session and reviewed by the physician. An evaluation of the program shows for 17 patients, one dropped out; eight abstained and none were consuming more than 35 drinks per week. This type of program may not experience the high drop-out rate of other programs since it requires only a brief session with the family physician who is accessible and already treating medical problems.(47)

A special program entitled "Helping Hands" (HH) was designed to prevent the recidivism of older alcoholics attending the Alcoholism Treatment and Education Centre at Long Beach, California. The thrust of the program is to assist recovering older alcoholics to establish and maintain permanent contact with support systems and to benefit from senior service agencies. The HH program invites older alcoholics to meet in groups of 14 to 24 persons twice a week. They form a discussion group and can talk about retirement difficulties, economic and personal problem, and new ideas for using time and community resources. Although the project accepts all ages, certain features meet the elderly's needs. Older persons are placed in close proximity to each other and this has enhanced the recovery process. The program counsellor believes the HH concept works because of the small, intimate discussion groups. There is interaction with peers, development of self-esteem and sobriety. Emphasis is on adjusting life changes, not old age itself. This inpatient program uses gerontology students and students from related fields from four universities. This provides practical experience for students and stimulates undergraduate papers and graduate level research projects.(19)

Dr. Bienenfeld is director of the Division of Geriatric Psychiatry and director of the Centre for Adult Development at the University of Cincinnati Medical Centre. His advice on treatment is to distinguish between alcoholism and alcohol abuse. A history of alcohol use and presenting clinical features (self-neglect, diarrhea, malnutrition, myopathy, incontinence, etc.) help to understand the elderly patient's involvement and dependence on alcohol. For elderly alcoholics who cannot stop drinking on their own, detoxification should precede treatment and should be carried out in a hospital because of the cardiovascular instability of old people. Withdrawal symptoms can be treated with drugs, preferably those with a short half-life. Dosages should be one-half to two-thirds of those in younger adults. After detoxification, a comprehensive treatment program should begin which includes assessment and therapy. Social services and group involvements should be part of the program. This gives the elderly a sense of attachment that competes with the isolation of drinking. Alcoholics Anonymous (AA) provides nurturance, acceptance support and immediate understanding particularly helpful to middle aged and elderly individuals. The peer group is important to the aging alcoholic. Skid-row and antisocial drinkers; those who live in isolation; those with family drinking partners and those with dementia have a very poor prognosis. Alcoholism is a tenacious problem and alcoholics are always at risk of relapse.(3)

Schuckit agrees that the older alcoholic should first be given detoxification in a hospital because of the increased risks of physical pathology, mental disorders and effects from drugs used to treat withdrawal. Once the patient is stable, treatment of the alcoholism can begin. Here, the author suggests that the patient's family should be involved to increase motivation toward abstinence and to benefit from the educational component of treatment. If the elderly patient lives alone, then there is an important need to have social service agencies to work with. Relevant peer group interaction may be needed and led by a counsellor who is himself older. Although the treatment techniques for all alcoholics may be similar, the older person has special medical vulnerabilities and social psychological stressors that require special attention.(67)

A treatment typology for the elderly alcohol abuser was developed by the Levindale Geriatric Research Centre (Baltimore, Maryland). The system has potential value for clinicians in diagnosing and choosing appropriate treatment for elderly alcoholics. The patient's problems are classified according to: (1) alcoholism or problem drinking; (2) their health problems or level of physical functioning; and (3) their social network difficulties or inadequacies. These three problem areas determine the treatment plan and resources that are needed. This typology can be used by physicians or other professionals who coordinate treatment for elderly alcoholics or problem drinkers. Considerable ingenuity may be required to find appropriate resources ideally suited for the geriatric patient. However, it is important to

have someone designated to take responsibility so the patient does not get "lost" between the various services. Once the factors in the elderly person's drinking problem are known (financial, social, health, etc.), the Levindale treatment typology shows how to link the patient with appropriate treatment resources.(63)

The treatment Sheldon Zimberg provides is based on the degree of severity of the alcohol abuse. He developed a scale that goes from level 1, where there is no problem, to level 6, which represents the skid-row public intoxicant. Each level is described (Table I in article) according to the frequency of drinking and intoxication. Most elderly with alcohol problems are at level 3, where the problem is most subtle and difficult to diagnose. To facilitate a diagnosis, there are 10 key questions posed (Table II in article), which can be used as a guide by the physician. This information should come from the patient, relatives and friends. Zimberg's treatment involves developing group therapy for elderly individuals with a variety of problems (depression, organic mental syndromes, social deficiencies) rather than a homogenous group. Outings and volunteer activities encourage a group cohesion and serve as a model of self-help. Groups should meet weekly for at least ninety minutes, and then socialize after the formal agenda. Alcohol problems generally clear up as the abuser becomes part of the group, establishes new friendships and recognizes his or her own self-worth. Psychosocial groups can also be effective in nursing homes and patient interactions can be improved by giving patients more responsibility for their own care and the care of others. The patient should be seen by their physician more frequently at the beginning of treatment, then gradually less. There can be important therapeutic value when the patient can visit a doctor who can listen attentively for 10 or 15 minutes. Attendance at the doctor's office is often the most important activity of the week for these patients.(80)

SUMMARY

Although some doctors do not detect alcohol abuse in their older patients, certain presenting symptoms and signs may help disclose a drinking problem. Primary treatment should probably come from the family physician, who is the key provider of patient care and can obtain available services for the elderly alcoholic. Treatment should be individualized and planned according to whether the elderly are early onset or late onset drinkers. The latter group may need only simple encouragement to stop, whereas the early onset alcoholic could require detoxification in hospital with maintenance and support. Social support from peers is a significant factor in successful treatment. Middle-aged or older alcoholics who have managed to maintain good social adjustment in later years have a good prognosis. Elderly alcoholics and heavy drinkers who regularly take medication can experience adverse reactions which compound their health problems and affect the therapeutic value of the drugs.

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